

Appln No. 09/370,601

Amdt date August 27, 2003

Reply to Office action of August 28, 2003

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

2H1S
1. (Previously canceled)

2. (Currently Amended) An irrigation ablation probe comprising:

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a probe body having proximal and distal ends and comprising an ablation electrode at its distal end, wherein the ablation electrode defines an inner cavity, the ablation electrode having at least one irrigation opening through which fluid can pass from the inner cavity to the outside of the ablation electrode, the probe body being generally rigid from its proximal end to its distal end so that the body cannot bend during ablation, and wherein the ablation electrode is generally straight and forms an angle α greater than 0° with the remainder of the probe body;

means for introducing fluid into the inner cavity; and

a handle mounted at the proximal end of the probe body, the handle comprising a housing having a generally open interior.

3. (Previously amended) An irrigation probe according to claim 2, wherein the ablation electrode has proximal and distal ends, wherein the distal end of the electrode is exposed at the distal end of the probe body and the proximal end extends into the handle.

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4. (Previously amended) An irrigation ablation probe according to claim 2, wherein the means for introducing fluid comprises an infusion tube attached to the proximal end of the ablation electrode.

5. (Previously amended) An irrigation ablation probe according to claim 2, wherein the generally rigid probe body comprises a malleable material.

6. (Currently Amended) An irrigation ablation probe comprising:
a probe body having proximal and distal ends and comprising an ablation electrode at its distal end, the ablation electrode having at least one irrigation opening through which fluid can pass to the outside of the ablation electrode, the probe body being generally rigid from its proximal end to its distal end so that the body cannot bend during ablation, and wherein the ablation electrode is generally straight and forms an angle α greater than 0° with the remainder of the probe body;

a handle mounted to the proximal end of the probe body, the handle comprising a housing having a generally open interior; and

an infusion tube having proximal and distal ends and extending through the probe body for introducing fluid into the ablation electrode, the distal end of the infusion tube being attached to the ablation electrode.

7. (Previously amended) An irrigation ablation probe according to claim 6, wherein the generally rigid probe body comprises:

a tubular electrode having proximal and distal ends, wherein the tubular electrode forms the infusion tube; and

a non-conductive sheath covering a portion of the tubular electrode.

8. (Original) An irrigation ablation probe according to claim 7, wherein the tubular electrode is made of stainless steel.

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9. (Original) An irrigation ablation probe according to claim 8, wherein the tubular electrode has an inner diameter ranging from about 0.40 inch to about 0.80 inch and an outer diameter ranging from about 0.50 inch to about 0.90 inch.

10. (Original) An irrigation ablation probe according to claim 7, wherein the tubular electrode has an outer diameter ranging from about 0.50 inch to about 0.70 inch.

11. (Original) An irrigation ablation probe according to claim 7, wherein the tubular electrode has an inner diameter ranging from about 0.40 inch to about 0.60 inch.

12. (Original) An irrigation ablation probe according to claim 7, wherein the distal end of the tubular electrode comprises an exposed region that is not covered by the non-conductive sheath.

13. (Original) An irrigation ablation probe according to claim 7, wherein the tubular electrode is made of a malleable material.

14. (Original) An irrigation ablation probe according to claim 7, wherein the proximal end of the tubular electrode is mounted in the handle.

15. (Original) An irrigation ablation probe according to claim 7, further comprising a flexible plastic tubing attached to the proximal end of the tubular electrode for introducing fluid into the tubular electrode.

16. (Original) An irrigation ablation probe according to claim 15, wherein the flexible plastic tubing is attached to the proximal end of the tubular electrode within the handle.

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17. (Cancel)

18. (Original) An irrigation probe according to claim 7, wherein the at least one irrigation opening is located on the surface of the tubular electrode to be in contact with the tissue to be ablated.

19. (Original) An irrigation probe according to claim 7, wherein the probe body has a length ranging from about 3.5 inches to about 12 inches.

20. (Original) An irrigation probe according to claim 7, wherein the probe body has a length ranging from about 5 inches to about 10 inches.

21. (Original) An irrigation probe according to claim 7, wherein the probe body has a length ranging from about 7 inches to about 8 inches.

22. (Original) An irrigation probe according to claim 12, wherein the exposed region of the tubular electrode has a length ranging from about 0.50 inch to about 1.5 inches.

23. (Original) An irrigation probe according to claim 12, wherein the exposed region of the tubular electrode has a length ranging from about 0.75 inch to about 1.25 inches.

24. (Previously amended) An irrigation ablation probe according to claim 6, wherein the generally rigid probe body comprises:

tubing having proximal and distal ends and at least one lumen extending therethrough, wherein the ablation electrode is mounted at the distal end of the tubing; and

a stiffening wire extending through one of the at least one lumens of the tubing.

25. (Previously amended) An irrigation ablation probe according to claim 24, wherein the infusion tube extends through one of the at least one lumens of the tubing, and wherein the distal end of the infusion tube is in fluid communication with at least one irrigation opening in the ablation electrode.

26. (Previously amended) An irrigation ablation probe according to claim 6, wherein the generally rigid probe body comprises:

tubing having proximal and distal ends and at least one lumen extending therethrough; wherein the ablation electrode is mounted at the distal end of the tubing;

wherein the infusion tube extends through one of the at least one lumens of the tubing, and wherein the distal end of the infusion tube is in fluid communication with the at least one irrigation opening in the ablation electrode; and

a stiffening wire extending through one of the at least one lumens of the tubing.

27. (Original) An irrigation ablation probe according to claim 26, wherein the probe body has a length ranging from about 3.5 inches to about 12 inches.

28. (Original) An irrigation probe according to claim 26, wherein the probe body has a length ranging from about 5 inches to about 10 inches.

29. (Original) An irrigation probe according to claim 26, wherein the probe body has a length ranging from about 7 inches to about 8 inches.

30. (Previously amended) An irrigation ablation probe according to claim 6, wherein the generally rigid probe body comprises:

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tubing having proximal and distal ends and first and second lumens extending therethrough; wherein the ablation electrode is mounted at the distal end of the tubing;

wherein the infusion tube extends through the first lumen of the tubing, and wherein the distal end of the infusion tube is in fluid communication with the at least one irrigation opening in the ablation electrode; and

a stiffening wire having proximal and distal ends that extends through the second lumen of the tubing.

31. (Original) An irrigation probe according to claim 30, wherein the stiffening wire is made of stainless steel.

32. (Original) An irrigation ablation probe according to claim 30, wherein the stiffening wire is made of a malleable material.

33. (Previously amended) An irrigation ablation probe according to claim 30, wherein the at least one irrigation opening comprises a longitudinal passage extending out the distal end of the tip electrode.

34. (Original) An irrigation ablation probe according to claim 30, wherein the at least one irrigation opening comprises at least one transverse passage.

35. (Original) An irrigation ablation probe according to claim 30, wherein the tip electrode is porous.

36. (Previously amended) An irrigation ablation probe according to claim 30, further comprising a temperature sensing means mounted in a blind hole in the tip electrode.

37. (Original) An irrigation probe according to claim 30, wherein the probe body has a length ranging from about 3.5 inches to about 12 inches.

38. (Original) An irrigation probe according to claim 30, wherein the probe body has a length ranging from about 5 inches to about 10 inches.

39. (Original) An irrigation probe according to claim 30, wherein the probe body has a length ranging from about 7 inches to about 8 inches.

40. (Previously canceled)

41. (Previously amended) A method for treating atrial fibrillation in a patient comprising:

opening the heart of the patient; and

ablating at least one linear lesion in the heart tissue using an irrigation probe as recited in claim 2.

42. (Previously Amended) An irrigation ablation probe according to claim 2, wherein the means for introducing fluid into the inner cavity comprises an infusion tube having proximal and distal ends and extending through the probe body.

43. (Previously Presented) An irrigation probe according to claim 42, wherein the infusion tube and the ablation electrode together comprise a single generally hollow body.

44. (Previously Presented) An irrigation probe according to claim 6, wherein the infusion tube and the ablation electrode together comprise a single generally hollow body.

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45. (Previously Presented) A method for treating atrial fibrillation in a patient comprising:

opening the heart of the patient; and

ablating at least one linear lesion in the heart tissue using an irrigation probe as recited in claim 6.

46. (Previously Presented) A method for treating atrial fibrillation in a patient comprising:

opening the heart of the patient; and

ablating at least one linear lesion in the heart tissue using an irrigation probe as recited in claim 26.

47. (Previously Presented) A method for treating atrial fibrillation in a patient comprising:

opening the heart of the patient; and

ablating at least one linear lesion in the heart tissue using an irrigation probe as recited in claim 44.

48. (Previously Presented) An irrigation probe according to claim 2, wherein the ablation electrode has an exposed surface that is conductive around a full circumference of the exposed surface.

49. (Previously Presented) An irrigation probe according to claim 6, wherein the ablation electrode has an exposed surface that is conductive around a full circumference of the exposed surface.

50. (Previously canceled)

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51. (Previously Presented) An irrigation probe according to claim 48, wherein substantially the entire exposed surface of the ablation electrode is conductive.

52. (Previously Presented) An irrigation probe according to claim 49, wherein substantially the entire exposed surface of the ablation electrode is conductive.

53. (Previously canceled)

54. (New) An irrigation probe according to claim 2, wherein the angle α ranges from greater than 0° to about 270° .

55. (New) An irrigation probe according to claim 2, wherein the angle α ranges from about 60° to about 140° .

56. (New) An irrigation probe according to claim 2, wherein the angle α is about 90° .

57. (New) An irrigation probe according to claim 6, wherein the angle α ranges from greater than 0° to about 270° .

58. (New) An irrigation probe according to claim 6, wherein the angle α ranges from about 60° to about 140° .

59. (New) An irrigation probe according to claim 6, wherein the angle α is about 90° .

REMARKS/ARGUMENTS

Claims 2 to 16, 18 to 39, 41 to 49, 51, 52 and 54 to 59 are pending, with claims 24 to 39 and 41 to 47 withdrawn from consideration. By the above